## AMENDMENTS TO THE CLAIMS

This listing of the claims will replace all prior versions and listings of the claims in this application.

LISTING OF THE CLAIMS:

Claims 1 - 8. (Canceled)

9. (New) A method of decontaminating heavy metal contaminated soil or sludge which includes

a) treating soil or sludge with an acid at a pH below 2 in a first treatment stage to form a liquid and a solid phase with a solids content from 5 to 30%

b) separating the liquid and solid phases from the first treatment stage

c) mixing the solid phase from the first treatment stage with a fresh acid liquid at a pH below 2 in a second treatment stage to form a liquid and a solid phase with a solids content from 5 to 30%

d) separating the liquid and solid phases from the second treatment stage

e) treating the liquid separated in step b) from the first treatment stage to precipitate heavy metals

f) separating the precipitated heavy metals from the liquid of step e) and recycling the liquid for use in the process

g) treating the solids from step d) to adjust the pH to a level acceptable for a soil conditioner or fertilizer

h) using the liquid from step d) as the acidic liquid in the first treatment stage for fresh batches of soil or sludge.

10. (New) A method as claimed in claim 9 in which the acid is sulfuric acid.

11. (New) A method as claimed in claim 9 in which the heavy metals are precipitated by adding a base to adjust the pH of the liquid to precipitate the metals as salts

12. (New) A method as claimed in claim 11 in which the base is potassium hydroxide.

13. (New) A method as claimed in claim 9 in which the solids from step d) are blended with crushed limestone.

14. (New) A method as claimed in claim 9 in which the first and second treatment stages are carried out in closed vessels containing a source of ozone in the head space of the closed vessels.

15. (New) A method of decontaminating contaminated soil or sludge which includes sulfur containing materials which method includes

a) treating sulphur containing soil or sludge with an acid at a pH below 2 in a closed vessel containing a source of ozone in the head space of the closed vessel to form a liquid and a solid phase with a solids content from 5 to 30%

b) separating the liquid and solid phases from the closed vessel

c) treating the liquid separated in step b) to precipitate heavy metals

d) separating the precipitated metals from the liquid of step c) and recycling the liquid for reuse in the process

e) treating the solid phase from step b) to adjust the pH to a level acceptable for a soil conditioner or fertilizer

16. (New) A method as claimed in claim 7 wherein the ozone is externally generated and introduced into the head space.